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ABSTRACT

Two aspects of knowledge use in schools are analyzed in this report. The first considers the "reception" of knowledge that results from professional social inquiry (PSI), and the second explores some factors that affect the internal school dissemination of such knowledge. Data were collected from 207 secondary school teachers in 45 schools in Victoria (Australia). Teachers responded to a checklist about their use of new educational knowledge, the sources of their knowledge, and their attitudes to PSI-type information. Principals completed a checklist about the ways educational information was distributed throughout the school, about resources allocated for materials designed for use by teachers, and about principals' attitudes to PSI-type information. Comparative analyses of two groups of teachers are outlined, the first group being made up of teachers with middle management positions (N=79), while the second group was composed of teachers, generally younger and less experienced, whose main responsibility was with day to day classroom teaching (N=116). Path analysis procedures were employed. Among the findings are that principals had little effect on the culture of the school in terms of the conditions needed for dissemination of new information. The one variable that principals consistently affected was the provision of resources. The instrument used to gather data from the teachers and a bibliography with 17 citations are appended. (MLF)

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# A PERSPECTIVE ON THE WITHIN-SCHOOL DISSEMINATION OF NEW EDUCATIONAL KNOWLEDGE

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# A PERSPECTIVE ON THE WITHIN-SCHOOL DISSEMINATION OF NEW EDUCATIONAL KNOWLEDGE

John M Owen

## INTRODUCTION

A notable trend in Australian educational systems during the past two decades has been the devolution of authority from centralised education agencies to schools. Within the large State public education departments schools have been granted more autonomy for administrative, organizational, and curriculum matters. A major reason put forward for devolution is that increased school level responsibility leads to a greater commitment from those who must implement procedures and programs at this level. In addition, it is argued that variations between schools in factors such as the needs of students, the location of the school, and the characteristics of the staff and school plant make it unrealistic for central authorities to lay down strict guidelines to which all schools should adhere. Proponents of school level control have been particularly keen for teachers and parents to exercise a strong say over curriculum matters (Skilbeck,1975).

The devolution of authority to schools implies a far wider role for teachers if effective school based curriculum development (SBCD) is to take place. Under a R,D and D system, curricula were 'handed down' to schools and teachers' major concerns were preparing for and implementing these curricula. In well planned R,D and D curricula, research findings on matters such as the cognitive and affective characteristics of pupils were taken into account in the development. In many cases, even the sequencing of learning activities were planned at the R,D and D level. By contrast, a SBCD suggests that, while

selection from the range of available curricula could take place, an equally suitable arrangement is adaptation or even the development of unique programs in each school.

This opens up the floodgates for teachers in terms of the extent and range of information required on which to base decisions about curriculum matters. It is clear that a large input into SBCD is knowledge about local conditions, and the craft knowledge teachers have of 'what works' for them. But for many educators, including those who support educational research and associated deliberative thought and those who carry out these activities, an important question is whether the results of such work are being used by those in schools when decision making about the curricula are being made. These forms of knowledge have been described as PSI knowledge by Lindblom and Cohen (1979). PSI knowledge is that which results from professional social inquiry. Educational research is one form of PSI but Lindblom and Cohen accept other forms of systematic intellectual activity including historical works, policy analysis, and the works of seminal minds such as Freud and Marx as forms of PSI. An associated question is concerned with the forms in which PSI is presented for teachers and the sources of the knowledge. The most likely scenario is that PSI knowledge needs to be drawn from variety of sources to assist in local school decision making, ie the sources are diffuse (Fullan, 1981). This suggests a role for someone in a school to harness the information and perhaps, to interpret it for use by others involved in planning processes.

Some observers, such as Raizen (1980) suggest that this type of information has little relevance for schools. However, data from a large scale study of knowledge use conducted in Australia suggests that PSI type knowledge is valued by teachers if it is presented in accessible forms (Owen,1982). A key question is; under what conditions can teachers gain access to such knowledge in the day-to-day context of schooling?

While it is apparent that many teachers gain access to PSI based

information through individual activities, such as subscribing to journals our data shows that (i) most teachers rely on their school for access to journals and articles, and (ii) school organised or supported seminars are important ways by which teachers obtain new knowledge (Owen, Malcolm, and Hall, 1981). It is apparent that the school principal is in a powerful position to control the flow of information on these matters, due to the fact that much of the material intended for within school distribution is addressed to him or her. The principal is also in a position to control the attendance of teachers at seminars and inservice courses at which new educational knowledge is presented.

This paper is devoted to two aspects of knowledge use in schools. The first is to consider the 'reception' of PSI type knowledge and the second is to explore some of the factors which affect the internal school dissemination of such knowledge. Both aspects seem to have been neglected in the study of knowledge utilization literature despite the extent of work done in this field of study in recent times.

## DATA BASE

Data were collected from secondary school teachers in the State of Victoria, Australia using a two-stage sampling technique (see Ross,1978). Altogether 207 teachers in 45 schools were interviewed in sessions lasting for about 45 minutes. They responded to a checklist about their use of new educational knowledge, the sources of this knowledge, and their attitudes to PSI type information. In addition the school principal completed a checklist which provided information about the ways in which educational information was distributed throughout the school, resources allocated for material designed for use by teachers, and his or her attitudes to PSI type information.

## FINDINGS OF THE STUDY

For this and the remaining sections of the paper, comparative analyses of two groups of teachers are outlined. The groups are (i) those teachers who could be described as holding 'middle management' positions in schools; heads of department positions or other co-ordinating roles such as a year or form level co-ordinator, and (ii) those teachers, generally younger and with less experience, whose major responsibility is with day to day classroom teaching. The first group (N=79) will be referred to as 'co-ordinators' and the second group as 'assistants'(n=116), the term used by the employing authority, the Education Department of Victoria. Most Victorian secondary schools have enrolments over 500 pupils and are structured so that there is a marked differentiation of staff roles. The purpose of this and other subsequent analyses is to determine whether the position held by a staff member in a secondary school is associated with reception of PSI knowledge and whether the impact of within school dissemination is also a function of the position held by the staff member.

## RECEPTION OF PSI TYPE KNOWLEDGE

One index of the impact of PSI type knowlege was the extent to which teachers read publications which were largely devoted to this form of knowledge (see Owen,1984a for a discussion of other indices). As a basis for developing the index all teachers were given a chart on which seven well known Australian educational publications were listed. These included; the Australian Journal of Eduation, SET-Research Information for Teachers, and the Educational Magazine. Respondents were asked to add other publications which they had referred to in their professional reading during the 12 months prior to the data collection. A review of the these additions allowed us to select 16 titles which were judged to contain articles based on PSI type knowledge. For each title on this list, teachers were asked to rate the impact of this journal on their work during the previous 12

TABLE 1

VARIABLES IN THE WITHIN-SCHOOL DISSEMINATION ANALYSIS

(Between teachers, N = 195)

| VARIABLE | RANGE | MEANS AND STANDARD DEVIATIONS | | |
|---|---|---|---|---|
| | | Co-ordinators (N=79) | Assistants (N=116) | p |
| NUMBER OF JOURNALS 'RECEIVED' | 0-16 | $\bar{X}$ = 4.13<br>SD = 1.79 | 3.33<br>1.58 | <.01 |
| INDEPENDENT VARIABLES | | | | |
| PRINCIPALS ATTITUDE | 0-40 | $\bar{X}$ = 28.8<br>SD = 3.3 | 28.4<br>3.5 | ns |
| PRINCIPALS STRATEGIES | 0-14 | $\bar{X}$ = 4.31<br>SD = 1.66 | 4.51<br>1.82 | ns |
| MEDIATING VARIABLES | | | | |
| SCHOOL COMMUNICATION | 0-80 | $\bar{X}$ = 31.7<br>SD = 8.29 | 30.3<br>7.83 | ns |
| TEACHER ATTITUDES | 0-4 | $\bar{X}$ = 26.9<br>SD = 4.12 | 26.7<br>3.93 | ns |
| RESOURCES | 0- | $\bar{X}$ = 0.391<br>SD = 0.227 | 0.340<br>0.179 | ns |

months, using the nine point scale shown in Appendix 1. The scale ranged from 'I am not aware of this journal' (level 1), to 'I browse through this publication occasionally' (level 4), to 'This publication has a high impact on my work' (level 9).

The measure of 'reception' was the number of these publications rated at level four or above on the scale. The results are summarised in Table 1. Means and standard deviations are shown for co-ordinators and teachers. The mean score for co-ordinators is 4.13 and for assistants is 3.33; the difference is statistically significant ($t=3.24$, $p< .01$). The mean scores are relatively low when compared with the possible maximum of 16, indicating that most of the respondents received few of the publications judged to be among the best known in Victoria. The significant difference indicates that co-ordinators generally read more of the publications than do assisstants. This might be expected given that co-ordinators have responsibilities for SBCD leadership, are more experienced and are thus more likely to know where to look for relevant articles, and have more time than classroom teachers in school hours for private research and reading time. For example, while most assistants generally have about 20 hours of classroom teaching each week it is not uncommon for a subject level co-ordinator to have a face to face teaching load of 12 hours or less. Even though co-ordinators have many extra responsibilities, this smaller commitment gives them some flexibilty to carry out private reading which is more difficult for classroom teachers to manage in school time.

## WITHIN SCHOOL DISSEMINATION - THE ROLE OF THE PRINCIPAL

The second part of this paper examines the links between teacher reception of PSI knowledge (as described above) and variations in the within-school strategies devised to disseminate PSI type knowledge in schools. To examine this systematically a tentative conceptual framework was developed and a set of indices was created to measure key variables. The framework is based on information collected during

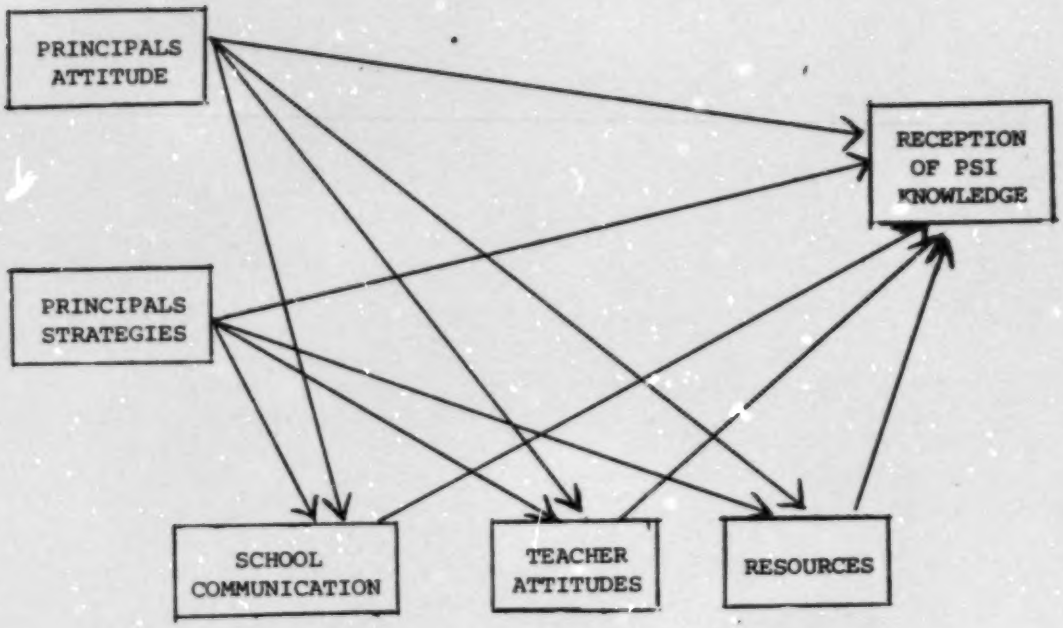


FIGURE 1

Tentative Framework for Examining Within-School Knowledge Dissemination

a series of case studies conducted before large scale data collection, and a review of the existing literature. The framework is outlined in schematic form in in Figure 1.

The framework has three sets of variables: characteristics of the principal , reception of new knowledge by teachers in the school (for this paper defined in the previous section), and a set of mediating variables. Two assumptions underly the framework. The first is that the principal directly affects the reception of PSI knowledge by teachers in his or her school. The second is that the principal can indirectly affect the reception of PSI knowledge through the creation of appropriate school conditions. A justification of these assumptions is presented below.

The two characteristics of the principal included in the framework are; attitude to the impact of PSI type knowledge, and the extent to which he or she uses strategies to distribute information of an educational nature to other members of the school staff. In the literature, Raizen (1980) has suggested that attitude plays a key part in the use of research based information in schools, and Knott and Wildavsky (1980) discuss the role of gatekeepers in impeding or improving the flow of information in organizational systems. In Victorian schools, the principal has a potential gatekeeping role because, as indicated earlier most written educational material arriving in a school is addressed to the principal even when it may be intended for an individual or department within the school.

Three mediating variables are included. These are; within school communication, teacher attitue to PSI knowledge, and resource allocation.

Within school communication is related to school climate, that part of the climate which depends on interaction between staff. Other research in the area has shown that climate has a significant effect on staff knowledge use (Hood, 1978; Louis,1979) and that one aspect of climate, interpersonal relations, is an important part of school

climate (Walberg, 1976). In this case, within school communication is a measure of the degree to which staff in a school transmit new information to colleagues as a normal part of their professional day to day activities.

Teacher attitude to new knowledge is included for the same reason it was included among the principal variables, namely that attitude towards new knowledge appears to affect its use.

Resource allocation is a variable describing school commitment to PSI type information; a commitment to the subscription of materials such as journals, books and brochures which could be used by teachers in planning and implementing curricula. These are generally held in a dedicated area of the school such as the school library and are generally under the control of a librarian. During the introductory case studies it was suggested that the princpal could exert an influence over the resource allocation to the library and that the existence of these resources could influence teachers to read more widely.

Reception of new knowledge has been described in the previous section. Reception is a stage in the knowledge acquisition process which preceeds its use. In passing it is important to note that knowledge use could have different meanings for teachers. Pelz (1978) has identified three types of use; instrumental, legitimative and use for enlightentment. While use of curriculum packages may have been the most likely form of instrumental use of new knowledge at one time in Victorian schools the trend to SBCD suggests that other forms of instrumental use can be found for PSI type knowledge (such as in the formulation of a total school policy). Another use to which new knowledge can be put is the enlightenment of the individual. Fullan (1981) contends that users become aware over time of knowledge in an area of concern but they do not neccessarily relate each segment of the accrued knowledge to a particular act of usage. Legitimative use is use for justifying past decisions. It is likely that PSI type knowledge is used for all three purposes described above.

## VARIABLES USED IN THE WITHIN-SCHOOLS DISSEMINATION ANALYSIS

The criterion variable for the within-school dissemination analysis has been described above. In this section the indices developed for quantifying the independent and mediating variables are outlined.

### INDEPENDENT VARIABLES

PRINCIPALS ATTITUDES. Each principal in the sample of schools completed an eight item Likert type scale which had been trialled before the main data collection phase. A typical item was "of the many influences on decisions in schools, the influence of research knowledge is relatively minor." Respondents were asked to respond using a scale which ranged from 'strongly agree' to 'strongly disagree'.

PRINCIPALS STRATEGIES. Each principal was asked to list the ways in which he or she (i) distributed new educational publications when they arrived at the school and (ii) distributed information about conferences, seminars etc. which teachers might attend to obtain new educational information. Examples of methods of distribution were; announcements at staff meetings, and memos to heads of all teaching departments in the school. Using the free responses a set of 12 methods of distribution was drawn up. Each principal was allocated a score according to the number of methods he or she used to distribute information.

### MEDIATING VARIABLES

SCHOOL COMMUNICATION. Each responent was asked to nominate up to four members of staff at the school who had provided PSI type information in the 12 month period before data collection. For each

member nominated, five different types of information were then suggested. The respondent was asked to indicate how often (once a week, once a term etc.) the member of staff had provided that type of information. By allocating a score for frequency of provision a measure of communication with each staff member was obtained. The net school communication score for the respondent was found by adding the contribution of each of the four members nominated.

TEACHER ATTITUDE. The scale was identical to that completed by principals.

RESOURCES. Each principal or his nominee provided a list of PSI publications to which the school subscribed. The index was created by dividing the number of such publications by the number of staff at the school.

The statistics for each of the variables are shown in Table 1. Excepting the criterion variable, there were no significant differences between co-ordinators and assistants on the six indices. The fact that co-ordinators and assistants came from a common set of 45 schools made it almost certain that variables such as the school principal's attitude and principal's strategies would have similar statistics for the two teacher groups.

Indices which had a greater potential for variation were school communication and teacher attitudes. However, an inspection of the data shows very similar values for these variables across groups.

Other features of the data which can be drawn from the Table are:

(i) principals had a slightly more positive attitude to PSI knowledge than co-ordinators and assistants.

(ii) principals used between four and five strategies, on average, to transmit information about PSI knowledge to school staff. The most likely strategies were; announcements about publications at

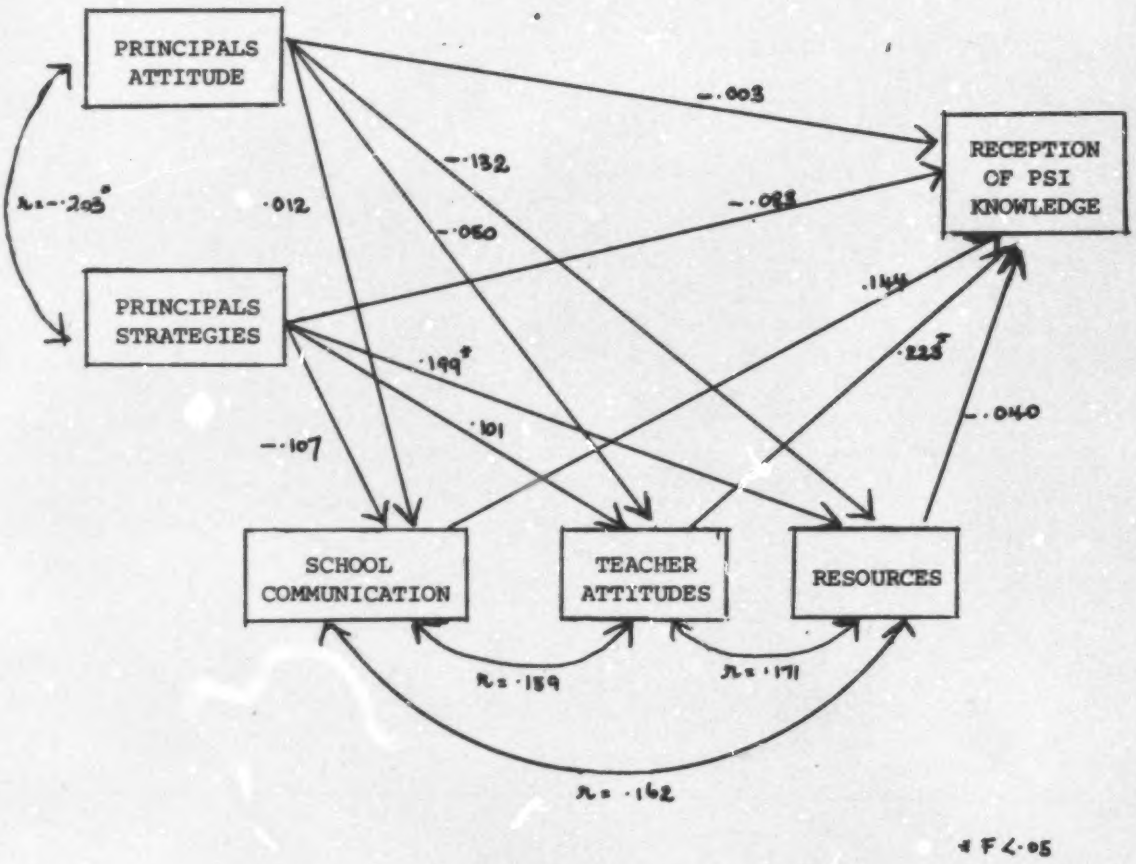


FIGURE 2

Path Diagram showing the Path Coefficients for Variables in the Hypothesised Framework. Secondary Schools. Assistants (N=122)

TABLE 2 SUMMARY OF PATH COEFFICIENT. ASSISTANTS

| | DEPENDENT VARIABLE | | | | |
|---|---|---|---|---|---|
| INDEPENDENT VARIABLES | SCHOOL COMMUNICATION | TEACHER ATTITUDES | RESOURCES | RECEPTION OF PSI KNOWLEDGE | RECEPTION OF PSI KNOWLEDGE |
| PRINCIPALS ATTITUDE | .012 | -.050 | -.132 | -.093 | -.003 |
| PRINCIPALS STRATEGIES | -.107 | .101 | .199* | .003 | -.083 |
| SCHOOL COMMUNICATION | | | | | .144 |
| TEACHER ATTITUDE | | | | | .223* |
| RESOURCES | | | | | -.040 |
| $100R^2$ | 0.43 | 1.40 | 4.93 | 0.88 | 8.80 |

staff meetings, internal notices to departmental groups about publications and about seminars and conferences, informal distribution about seminars and conferences in staff rooms.

(iii) the average number of PSI publication subscriptions in the schools was small, about one for every three staff members.

(iv) the mean school communication 'press' was less than one half of the possible range. Analysis of this index in another publication showed that many school staff relied on only one or two other staff members for PSI information rather than on an extended group of school staff (Owen 1983).

## LINKS BETWEEN THE VARIABLES

### ASSISTANTS

In order to analyse the intercorrelations and to test the tenability of the conceptual framework outlined in Figure 1, path analysis procedures were employed. This involved a series of regression analyses using standardised scores on the six variables. This allowed direct comparisons of the paths between the two groups of teachers.

Path coefficients for assistants are shown on Figure 2. To ascertain the relative impact of the variables on the criterion more clearly, further statistical data is presented in Table 2. In addition to path coefficients (beta weights), the percentage of variance ($100r^2$) is given for each of the regression analyses.

The figure shows that the direct effect of the principal on PSI knowledge reception is negligible. The path coefficients for principals attitude and principals strategies are -.003 and -.083 respectively. Furthermore the attitudes and strategies employed by the principal are largely unrelated to the mediating variables. The

only significant path is that between principals strategies and resources; where the principal uses a greater number of dissemination strategies, a greater proportion of the school budget for publications is directed towards publications with a PSI content.

There is a negative statistically significant correlation between principals attitudes and strategies. This, coupled with the path coefficients from these two variables to the mediating variable resources suggests that there are principals who, even though they have no personal commitment to research type information, nevertheless support the notion that teachers should have access to PSI material in the school. It may be that this is a relatively expedient way for principals to support, or at least to give the impression of supporting the use of PSI knowledge in the school.

The simple correlation coefficients between the mediating variables are not statistically significant. It can be concluded therefore, that teacher attitudes to PSI are not associated with school communication or the provision of PSI resources.

The only other statistically significant path in the framework is that linking teacher attitudes to reception of PSI knowledge. The fact that principals characteristics do not affect teacher attitudes (only 1.4 percent of the explained variance, see Table 2) suggests that these are formed by other factors besides those which can be attributed to the influence of the principal.

As seen in Table 2, the 'full model' explains only 8.8 percent of the total variance. Teacher attitude provides almost twice the contribution of variation to the criterion variable than the next most important; school communication. Given the insignificant principal influence on these variables it is evident that the school principal does not affect the reception of PSI knowledge by classroom teachers.

TABLE 3 SUMMARY OF PATH COEFFICIENTS. CO-ORDINATORS

| | DEPENDENT VARIABLE | | | | |
|---|---|---|---|---|---|
| INDEPENDENT VARIABLES | SCHOOL COMMUNICATION | TEACHER ATTITUDES | RESOURCES | RECEPTION OF PSI KNOWLEDGE | RECEPTION OF PSI KNOWLEDGE |
| PRINCIPALS ATTITUDE | .141 | .257* | -.057 | .197* | .073 |
| PRINCIPALS STRATEGIES | -.034 | .174 | .196* | .067 | .027 |
| SCHOOL COMMUNICATION | | | | | .321* |
| TEACHER ATTITUDE | | | | | .225* |
| RESOURCES | | | | | -.004 |
| $OOR^2$ | 3.28 | 10.3 | 3.91 | 4.11 | 20.6 |

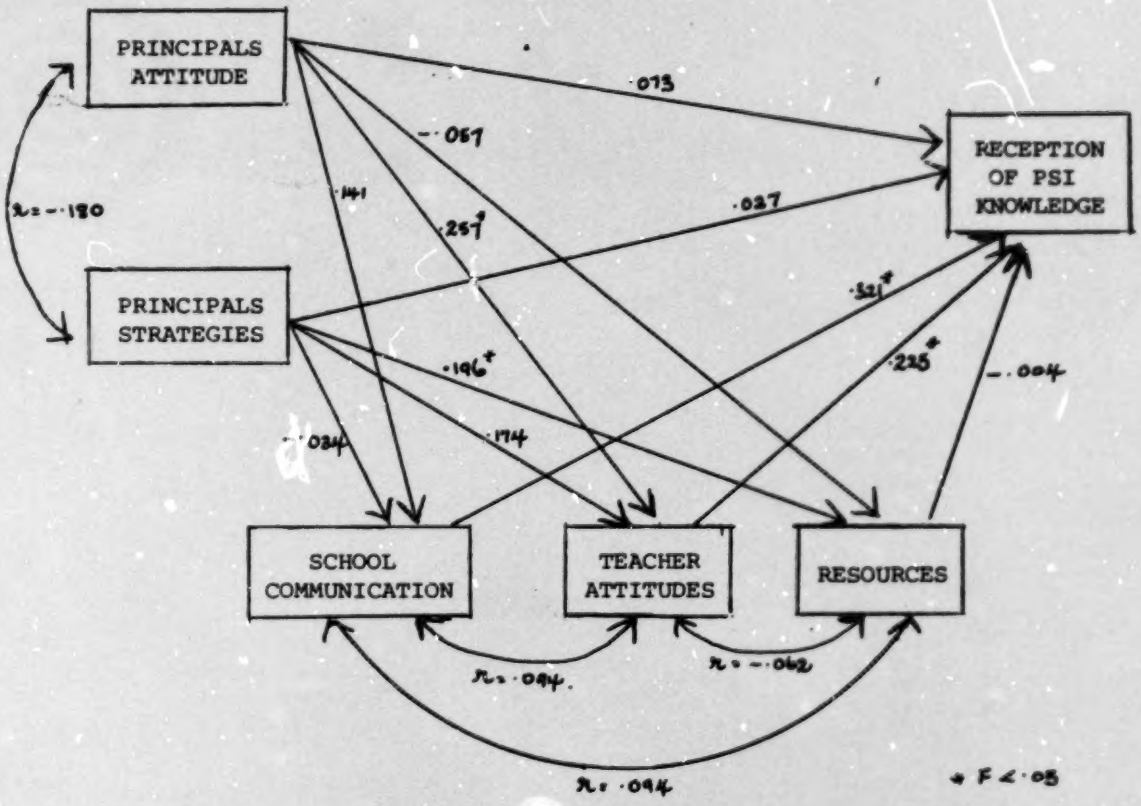


FIGURE 3

Path Diagram showing the Path Coefficients for Variables in the Hypothesised Framework. Secondary Schools. Co-ordinators (N=79)

CO-ORDINATORS

Similar statistics, this time for co-ordinators, are outlined in Figure 3 and Table 3. The most striking finding is that there are far more significant paths for co-ordinators than was the case for assistants, and that the percentage of variance explained within the framework is higher. For example, the 'full model' explains 20.6 percent of the total variance compared with 8.8 percent for assistants. However, the direct effect of the principal is again virtually negligible, path coefficients between principal's attitudes, principal's strategies and reception of PSI knowledge are .073 and .022 respectively, see Figure 3.

Again, principals strategies are associated with the provision of resources but this does not affect the take up of PSI type knowledge by teachers. In addition, however, the principal influences the attitudes of co-ordinators towards PSI knowledge (10.3 percent of the variance).

The data also shows that school communication and teacher attitude to PSI knowledge have significant positive associations with the reception of PSI knowledge by coordinators. The path coefficients linking reception with school communication and teacher attitude are .321 and .225 respectively. The Table suggests that school communication is the more important variable of the two in explaining variation in PSI knowledge reception. An inspection of the path diagram suggests that the actions and attitudes of the principal does not affect school communication as perceived by co-ordinations, but these variables appear to affect the attitudes of co-ordinators toward PSI knowledge.

DISCUSSION

It is possible to explain the small effects which have been

uncovered in this analysis through recourse to the prevailing arrangements in Victorian secondary schools. The explanation considers three aspects; the roles of teachers, particularly those who have been described in this paper as assistants; the structure and culture of schools, and the normative roles of principals.

Take first the roles of classroom teachers. In contrast to other Western countries, the teaching profession is young, in Victoria the average age of science teachers is about 30 years. Many classroom teachers could be classed as beginners, in their first few years of teaching. Research by Fuller and Brown (1975) and others shows that the overwhelming concerns of young teachers is with teaching-learning situations such as those which take place in the classroom. These teachers are less concerned than their older more experienced colleagues with curriculum development, and with resources which might be used in making decisions about general school policy. Recent evaluations of the concerns of beginning teachers in Victoria support the findings of Fuller and Brown (Owen,1984b). This suggests a division within SBCD between planning and implementation activities with younger teachers taking a minor role inthe planning function and a major role in implementation.

Secondly, most teachers in Victorian secondary schools work in departments. Within the school, many curriculum decisions are taken at the departmental level and hence there is a decentralization of authority and control. In this respect secondary schools differ from primary schools (Firestone and Herriott 1981). Young teachers tend to rely on their subject department head for educational leadership. While departmental heads have regular dealings with the principal, for many classroom teachers the principal is remote. When assistants were asked in this study to nominate the members of staff most influential in directing their attention to sources of new educational information only six percent nominated the principal, while 44 percent nominated a head of department.

Much has been written about the role of the principal; the

literature is too voluminous to be considered in depth here. It is sufficient to say that much lip-service has been paid to the notion of the principal as an active educational leader, responsible not only for the development of broad policy, but also for supporting and encouraging professionalism among staff in the school. The reality of this needs to be challenged, at least within the Victorian context. This study shows that principals had little effect on the culture of the school in terms of the conditions needed for dissemination of new information. In general they had little influence on the approaches of the staff toward the use of PSI knowledge. This applied in particular to assistants. The one variable which principals consistently affected was the provision of resources. It is ironic that this provision appeared not to affect the takeup of PSI knowledge by teachers.

Other studies of principals' roles show them to be occupied with a range of organisational, administrative, and political activities involving parents education departments, teacher unions etc. Historically, Victorian school principals have been given little encouragement to enter into educational matters in their schools by the State education department, and it has become the exception rather than the rule for principals to lead educational debates in the schools.

It may be an apprpopriate time to rethink the roles of principals given the realities of the position they occupy. One suggestion is that educational leadership within large secondary schools to be given to a a senior member of the school staff who would be largely free of administrative responsibilities. Alternatively, if there is to be a resurgence of active educational leadership by principals, I would suggest at least two changes to the status quo. First, principals will need to have much of the administrative load shifted from their shoulders. Second, there seems to be a need for a massive in-service effort through which principals can be made familiar with curriculum, research, dissemination strategies, and associated educational matters. This would give school leaders the necessary time and

understanding for them to be proactive in the school based debates about what should be taught, and how.

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APPENDIX 1. Item Used to Gather Data on Reception of Publications.

1. (a) We are interested in the use you make of journals or pamphlets in which educational research is discussed.

- For each publication listed in Column A, indicate your use of it during the last 12 months by ticking the appropriate statement from Column B. Where more than one statement seems appropriate, tick the one highest on the scale.
- In Column C, indicate for the publication you use the means of your access to them.
- Add to the list in Column A other publications you use in which educational research is discussed. Finally, complete Column B and C for these journals.

**COLUMN B**
**LEVEL OF USE**
**(during the last 12 months)**

1. I am not aware of this publication.
2. I am aware of this publication but have not read it.
3. I have once or twice browsed through this publication.
4. I occasionally read selected articles from this publication.
5. I regularly read a number of articles from this publication.
6. I often make notes or photocopies of articles from this publication.
7. I often follow up reading from this journal with related reading or discussion.
8. My reading of this journal has considerable influence on my work.

| COLUMN A RESEARCH SOURCE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | COLUMN C SUBSCRIPTION: Personal | School | Teachers Centre | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Aust. Journal of Education | | | | | | | | | | | | |
| 2. Curriculum & Research Bulletin | | | | | | | | | | | | |
| 3. SET: Research Information for Teachers | | | | | | | | | | | | |
| 4. Subject Assoc. Journal (name it ) | | | | | | | | | | | | |
| 5. Education News | | | | | | | | | | | | |
| 6. The Educational Magazine | | | | | | | | | | | | |
| 7. Education Age | | | | | | | | | | | | |
| 8. | | | | | | | | | | | | |
| 9. | | | | | | | | | | | | |
| 10. | | | | | | | | | | | | |
| 11. | | | | | | | | | | | | |



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